هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

T-104
2022

Course Specification

Course Title:	Electronics
Course Code:	121 EPET
Program:	Electrical Power Engineering Technology (EPET)
Department:	Electrical Engineering Technology (EET)
College:	College of Applied Industrial Technology (CAIT)
Institution:	Jazan University
Version:	T-104 - 2022
Last Revision Date:	2023

Table of Contents:

A. General Information about the Course

Course Identification					
1. Credit Hours: 2					
2. Course Type:					
a. University		College		Department ☑ Track	Others
b. Required	☑ Elective				
3. Level/year at which this course is offered:		5th Level		2nd Year	

4. Course General Description

This course combines knowledge with hands-on experience, to enable students to learn about and acquire the necessary skills to deal with basic electronics, such as diodes, transistors, rectifier, op-amps etc. The course is introduced through four classes weekly. They are 1 hour class for theoretical part and 2 hours classes for laboratory for which students apply and implement the concepts of the lectures.

5. Pre-requirements for this course (if any): 191 PHYS

6. Co- requirements for this course (if any): -------

7. Course Main Objective(s):

The objective of this course is to provide two years electrical engineering undergraduates with sufficient fundamental, theoretical and practical knowledge to pursue advanced topics in analog and digital integrated circuits.

1. **Teaching Mode: (Mark all that apply)**

No	Mode of Instruction	Contact Hours	Percentages
1	Traditional classrooms	36	100.0%
2	E-learning		0.0%
3	Hybride * Traditional classrooms * E-learning		0.0%
4	Distance learning		0.0%

2. **Contact Hours (based on the academic semester)**

No	Activity	Contact Hours
1	Lectures	12
2	Laboratory/Studio	24
3	Field	
4	Tutorial	
5	Others (specify)	
	Total	**36**

Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes (CLOs)	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Recognize the Conduction in Metal and Semiconductor. Describe operation of diodes, transistors in order to design basic circuits.	K1.1	Structured Lectures Worked Examples	Exams Homework
2.0	**Skills**			
2.1	Define P-N junction, Discriminate the difference of P-N Junction Diode circuits.	S1.2	Structured Lectures Worked Examples	Exams Presentation
2.2	Analyze the BJT Bipolar Junction Transistor.Describe Op-Amp Operational circuits, and class A, AB, B, C, power amplifier. Design different application circuits using op amp.	S1.1	Structured Lectures Worked Examples	Exams Homework
3.0	**Values, autonomy, and responsibility**			
3.1	Collect essential information of a given equipment/components in the lab by using multiple means and then inferring its performance and codes.	V1.3	Worked Examples Questioning	Exams Exams
3.2	Show independent timeliness work in classroom with effective contribution with classmates.	V1.2	Worked Examples Worked Examples	Homework Homework

C. Course Content

No	List of Topics	Contact Hours
1	Semiconductor materials (Ge, Si, and GaAs), Energy levels, Extrinsic Materials: n-Type and p-Type, Conduction in metal and semiconductor, Electronics of PN junction.	6
2	Semiconductor diodes, Ideal verses practical, Resistance levels, Diode equivalent circuits, Zener diodes, Light Emitting diodes.	6
3	Diode Applications: Introduction, Load Line Analysis, series and parallel diode configuration, Half-wave rectification, Full-wave rectification.	8
4	Introduction to Bipolar Junction Transistors, Field Effect Transistors, JFET, MOSFET.	6
5	Introduction to Operational Amplifiers, differential Amplifier circuit, op-Amp basics.	6
6	Revision of theoretical contents.	4
	Total	**36**

D. Students Assessment Activities

No	Assessment Activities	Assessment Timing (In Week No)	Percentage of Total Assessment Score
1	Class activity/Interaction and Prese	All Weeks	10%
2	Homework-1	Week 3	5%
3	Homework-2	Week 9	5%
4	Mid-term Exam	Week 7	20%
5	Internal Lab	All Weeks	10%
6	Final Lab exam	Week 11	20%
7	Final Exam	As Scheduled	30%

* Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities

1 References and Learning Resources

Essential References	1	BOYLESTAND, "Introductory Circuit Analysis", 10th Edition. Uppenborn, F. J. (1889). History of the Transformer. London: E. & F. N. Spon. pp. 35–41.
Supportive References	1	• Classroom policy.
	2	Lecture notes and hardcopies of some sections from "Electronics Devices and circuit theory, Boylestad, 10th Edition, Publisher- Prentice Hall.
Electronic Materials	1	Not utilized
Other Learning Materials	1	Not utilized

2 Required Facilities and Equipment

Items	Resources
Facilities (Classrooms, Laboratories, Exhibition rooms, Simulation Room, etc.)	Suitable Classroom Suitable Lab Whiteboard Suitable number of chairs
Technology Equipment (Projector, Smart Board, Software)	Projector Smart Board Suitable number of Computers
Other Equipment (Depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Method
Effectiveness of Teaching	Student	Direct
	Course Coordinator	Direct
Quality of Learning Resources	Course Instructor (Faculty)	Direct
	Course Coordinator	Direct
The extent to which CLOs have been achieved	Course Coordinator	Direct
Other		

G. Specification Approval Data

Council/Committee	Electrical Engineering Technology (EET)
Reference Number	CAITEET23031
Date	3 09 2023